

**138 Exam 2
Practice**

1. Solve for u : $\frac{4}{u-1} + \frac{6}{2u+1} = \frac{5}{2u+1}$

2. Solve for t : $\sqrt{3t+2} = t+5$

3. Simplify: $\frac{4x^3 - 14x}{(2+6x)x}$

4. Do the following tables describe a functions? **State why or why not?**

x	y
2	3
3	-1
4	4
2.3	7
4.4	6
3.3	5
6	7

x	y
2	-2
3	-1
4	4
2.3	7
4	6
3.3	5
6	10

3. Consider the function $f(x) = \sqrt{x+1}$.

a. Find $f(0)$.

b. Find $f(t-2)$

c. Find the domain of $f(x)$.

4. Consider the function $f(x) = \frac{\sqrt{x+2}}{x-7}$.

a. Find $f(0)$.

b. Find $f(t-2)$

c. Find the domain of $f(x)$.

5. Find the domain of $h(x) = \frac{10x-5}{x^2-2x}$.

6. A function is used to calculate the number of mopeds, m , built in a factory that employs h hours of employee work. If the formula is $m = 60h + 3h^2 - .002h^3$, what is the domain of the function?

7. Consider the following graph:

a. On what intervals (if any) is the graph increasing? _____

decreasing? _____

constant? _____

b. Determine the relative minimum or maximum (if any)

relative minimum? _____

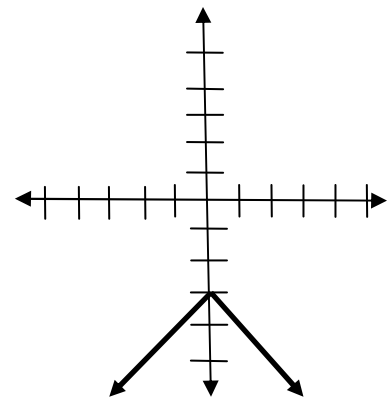
relative maximum? _____

c. Is y a function of x ? Explain your reasoning.

d. What is the domain of this function?

e. What is the range of this function?

f. Give the general equation of the function family to which this graph belongs.



8. Sketch the graph of $f(x) = \lceil 2x \rceil$.

9. Describe the sequence of transformations from $f(x) = \sqrt[3]{x}$ to $y = -\sqrt[3]{x} + 2$.

10. Translate the following function equation right 2, then reflect about the x -axis:

$$f(x) = \frac{3x}{x+1} - \sqrt{x+4}$$

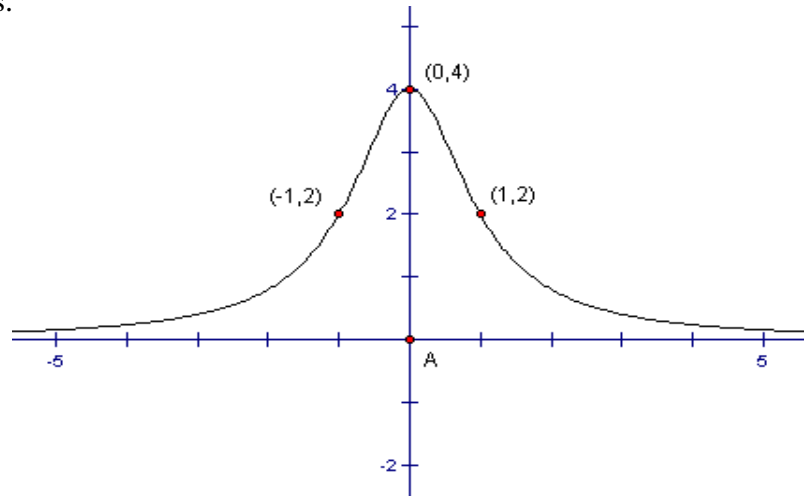
11. Consider the graph of $f(x) = x^3$. Write an equation for the description: the graph of $f(x)$ is reflected in the y -axis, and shifted three units upward.

12. Write the equation of the function $f(x) = x^2 + x - 1$ shifted right 2 and down 1.

13. Use the graph of f (see figure) to sketch the graphs of g and h . Sketch them on the same plane with f and be sure to label your answers.

a. $g(x) = f(x - 2) + 1$

b. $h(x) = -f(x) - 1$



c. True or False: The graph of f has an inverse function.

14. Let $f(x) = 2x - 3$ and $g(x) = 1 - x$. Find the following and simplify:

a. $(f - g)(x)$

b. $(fg)(x)$

c. $\left(\frac{f}{g}\right)(-2)$

15. Let $f(x) = \frac{3}{x^2}$ and $g(x) = x + 1$. Find the following and simplify:

a. $(f \circ g)(x)$

b. $(g \circ f)(3)$

16. Find the inverse of the function: $f(x) = \frac{3}{2+x}$.

17. Find the inverse of the function: $f(x) = (x+2)^3 - 7$.

18. Determine whether the functions: $f(x) = \frac{x-1}{x}$ and $f(x) = \frac{-1}{x-1}$ are inverses.

19. Determine whether the function: $f(x) = x^3 + 3x$ is invertible.